DESCRIPTION

SEALING BAG WITH CHUCK

Technical Field

The present invention relates to a sealing bag with a chuck which is provided with a clamping type chuck (fastener) for opening, closing or sealing the bag near an opening of a bag body formed of a synthetic resin film or the like.

More particularly, the present invention relates to a sealing bag with a chuck suitable for a small-sized sealing bag for use in storing any of medical supplies, foods, miscellaneous goods and the like, wherein projected parts which integrally project from both inner and outer faces of a bag body are disposed on tape end edge parts of the chuck and the projected parts are disposed on the inside of the bag body not exposed via the opening without being fused on a bag side, so that an easy-to-unseal property of the bag can be surely enhanced without enlarging the chuck or the entire bag and without causing fusion, flatness of the like of the projected parts at the time of bag-making.

Background Art

In general, sealing bags with chucks are known in which female and male clamping type chucks formed of resins are bonded to opening parts of bag bodies formed of synthetic resin films and the like. As for the sealing bags with the chucks of this type, the bags themselves can

be inexpensively manufactured in large quantities, and they are lightweight and superior in flexibility, water resistance and the like. Moreover, the clamping type chucks are freely opened and closed. Additionally, when the chuck is closed, the bag can be easily sealed. Therefore, the bags have broadly spread as containers or bags for storing any of medical supplies, foods, miscellaneous goods and the like. In the chuck disposed in this kind of sealing bag formed of the resin, a pair of female and male clamping devices are disengageably formed on the surface of a tape formed of the resin, and the tape is thermally fused or otherwise treated near the opening in the bag body. When female and male parts of the clamping devices are clamped or unclamped, the opening of the bag is opened and closed, and the bag is sealed in a clamped state of the clamping devices.

Here, to open/close the chuck disposed in the sealing bag, when the bag is closed, the female and male parts opposed to each other at a distance are partially positioned, and held in fingers, the held places are pressed with the fingers to clamp the parts, and the pressing fingers are moved along the opening part. Accordingly, the female and male parts can be successively clamped to close the whole chuck. Moreover, to open the chuck whose female and male parts are clamped, the opening edge part of the bag body is grasped and pulled on opposite sides with the fingers, accordingly a clamped part of the female and male parts is released, the chuck is successively detached from the unclamped part, the whole chuck is unclamped, and the bag can be opened.

Additionally, in the sealing bag with the chuck, since the bag body is formed by a thin film of polypropylene or the like, the opening edge part of the bag held in the fingers in opening the chuck easily slips. Especially when finger tips are wet or a weak person tries to open the bag, the fingers slip, and the chuck cannot be opened well.

In general, in this type of the sealing bag, the pair of female and male clamping devices constituting the chuck are clamped with a constant strength in such a manner that the bag can be securely sealed, and the chuck cannot easily open. Therefore, with the conventional sealing bag whose grasped parts easily slip, an operation for unsealing the bag is difficult. The bag has a problem in ease of using or opening especially as a bag for medical supplies utilized by infants and old people or a bag for foods or miscellaneous goods used by housewives at home.

To solve the problem, there has been proposed a sealing bag with a finger nonslip structure, in which projections to be held in fingers are disposed near the bag opening part in order to prevent the fingers from slipping at the time of the unsealing and to diminish difficulty in unsealing the chuck in the above-described resin sealing bag.

FIGS. 11 and 12 show sections of the conventional sealing bag provided with the finger nonslip structure which has heretofore been proposed, FIG. 11 is a side sectional view of the entire sealing bag, and FIG. 12 is a main part side sectional view near the bag opening part.

The sealing bag shown in FIG. 11 has been proposed in Japanese Utility Model Application Laid-Open No. 3-19313. A chuck 111 (referred to as "the railed fastener" in the publication) on which a pair of female and male clamping devices 112 (112a, 112b) are formed is bonded in such a manner as to continuously extend outside an opening edge part of a bag body 101 formed of a resin, outer edge parts of the chuck 111 are extended/bent outwards as clamping parts 113a, 113b, and expanded parts 114a, 114b formed in triangular sectional shapes as finger nonslip means are formed on end edges of the clamping parts 113a, 113b. According to the sealing bag, when the expanded parts 114a, 114b disposed on outer endmost parts of the chuck 111 are held in the fingers, it is possible to open the chuck 111 while the fingers do not slip at the time of the unsealing of the bag.

Moreover, the sealing bag shown in FIG. 12 has been proposed in Japanese Utility Model Application Laid-Open No. 5-76309. In the same manner as in the sealing bag shown in FIG. 11, a chuck 211 (referred to as "the railed fastener" in the publication) on which a pair of female and male clamping devices 212 (212a, 212b) are formed is bonded in such a manner as to continuously extend outside an opening edge of a bag body 201, outer edge parts of the chuck 211 are constituted as clamping parts 213a, 213b, and a plurality of projections 214, 214 ... constituting finger nonslip means are formed on the surfaces of the clamping parts 213a, 213b. According to the sealing bag, the plurality of projections 214, 214 ... are formed on the surface of the edge part of the chuck 211 are formed at

predetermined intervals, thick parts of the fingers can be fitted among the plurality of projections 214, 214 ..., and accordingly the slippage of the fingers at the time of the unsealing of the chuck can be prevented.

However, in the sealing bags provided with the finger nonslip structures which have heretofore been proposed, as shown in FIGS. 11 and 12, any chuck is continuously fused outwards from the opening side edge part of the bag body, the outer edges of the chuck are further extended outwards as the clamping parts, and therefore there has been a problem that the entire bag including the chuck is enlarged. The enlargement of the sealing bag by this chuck has not raised any problem in the sealing bag enlarged in such a manner that the bag itself accommodates large contents such as bedclothes and clothes, but has largely influenced downsized and thinned sealing bag for use in medical supplies, foods or the like.

Additionally, in the structure in which the chuck continuously extends outside the bag opening part, the chuck itself constitutes the opening part, and the chuck is not covered in its periphery. Therefore, at the time of the opening of the chuck, the contents spill out, or foreign matters are easily mixed into the bag. This has been a serious problem especially in a small-sized sealing bag used for household or medical treatment, in which small or fine matters, liquids and the like are stored.

Furthermore, in the sealing bag having the chuck formed on the opening-side endmost part thereof, a problem also occurs that a bag opening part cannot be sealed (top

sealed). In this type of sealing bag for use, for example, in distribution, the bag needs to be completely sealed, and all four sides of the bag including the opening part on a chuck side need to be sealed. Additionally, in the sealing bag on which the chuck is disposed outside the opening part of the bag and the clamping part for nonslip is formed, the bag cannot be sealed on the opening side, and the bag cannot be used especially in the sealing bag for the distribution.

Moreover, in the nonslip structure including the projections (expanded parts) on the endmost parts of the chuck as in the sealing bag shown in FIG. 11, since the continuing parts do not exist outside the expanded parts, fingers' forces are concentrated only on the expanded parts. As pointed out in the Japanese Utility Model Application Laid-Open No. 5-76309, there has been a problem that the expanded parts strongly bite into finger tips, and finger tips become painful and numb.

On the other hand, in the structure in which the plurality of projections are separately formed on the opposite surfaces of the clamping parts as in the sealing bag shown in FIG. 12, there has been a problem that the finger's forces are scattered to the plurality of projections formed on different positions, and are not easily exerted.

Here, as means for avoiding the problem of the conventional sealing bag on which the chuck is continuously fused outside the bag body as described above, it has been considered that the entire chuck is minimized, and is

disposed/fused on the inner face of the bag body, and nonslip means such as projections are projected on the inner face side of the bag.

However, when the chuck is simply disposed on the bag body inner face, and the projections are only formed, the projections can be projected only on the inner face side of the bag, and this cannot be always said to be sufficient as the means for preventing the fingers from slipping. When the chuck is fused to the bag body, the projections disposed on the bag inner face are fused together with the chuck, and flatted, and there has also been a possibility that the projections do not function as the finger nonslip means. Furthermore, to prevent the projections from being fused or flatted, for example, it is also considered that the projections are formed to be long beforehand in such a manner as to have certain lengths even if fused. However, when the projections are simply lengthened, the projections easily fall at the time of manufacturing of the bags, the manufacturing becomes difficult. Moreover, since the projections project long from the inside of the bag, the fingers are not easily inserted into the bag opening part, and additionally there has been a possibility that an opening/closing property of the bag is impaired.

The present invention has been proposed to solve the above-described problems of the conventional techniques, and an object thereof is to provide a sealing bag with a chuck preferable for a small-sized sealing bag for use especially in storing medical supplies, foods, miscellaneous goods or the like, in which projected parts

integrally projecting from both inner and outer side faces of a bag body are disposed on tape end edge parts of the chuck and in which the projected parts are disposed on the inside of the bag body not exposed via opening parts without being fused on a bag side, so that an easy-to-unseal property of the bag can be surely enhanced without enlarging the chuck or the entire bag and without causing fusion or flatness at the projected parts at the time of bag-making.

Disclosure of the Invention

To achieve the above-described object, there is provided a sealing bag with a chuck of the present invention, comprising a bag body which opens on one side; and a chuck having a pair of tapes bonded near an opening part of the bag body and opposed to each other along the opening part of the bag body, and a pair of female and male clamping parts formed on the faces of the pair of tapes opposed to each other and disengageably clamping with each other along the opening part of the bag body to openably/closably seal the bag body, the sealing bag further comprising projected parts formed in projected lines at the bag body opening side edge parts of the pair of tapes and integrally projected to inner and outer face sides of the bag body, the pair of tapes being bonded to the inside of the opening part in the inner face of the bag body in such a manner that the projected parts are positioned inside the opening edge part of the bag body.

According to the sealing bag with the chuck of the present invention constituted as described above, the

projected parts are disposed as means for preventing fingers from slipping at the time of opening/closing of the bag along the end edge part of the chuck which opens/closes and seals the bag body. The projected parts are disposed inside the opening part of the bag body together with the chuck. When the chuck and the projected parts are positioned inside the bag body in this manner, the chuck or the nonslip structure does not largely project to the outside of the bag, and the chuck and the entire bag can be miniaturized.

Moreover, since the entire chuck including the projected parts is structured in such a manner as to be accommodated in the bag body, the opening edge part of the bag body can be further extended to the outside of the chuck. Therefore, the entire opening part provided with the chuck can be covered with the bag body, the contents do not spill out, or any foreign matter does not penetrate during the opening/closing of the sealing bag.

Furthermore, the projected parts of the present invention, constituting the finger nonslip means of the sealing bag, is constituted of, for example, projections having circular sectional shapes and substantially uniformly and integrally projecting in inner and outer face directions of the bag body in a state in which the chuck is attached to the inner face of the bag body, and the projections are positioned inside the bag without being exposed from the bag body. By this constitution, since the projected parts integrally project on the inner and outer face sides of the bag, the projected parts can be firmly held in two fingers at one place from the inner and outer

faces of the bag. Additionally, since the projected parts are positioned inside the bag body, the opening edge part of the bag extends further outside the projected parts held in the finger (on the side of the thick parts of the holding fingers), and the extended bag edge parts can be held in the fingers together with the projected parts.

Therefore, in the sealing bag of the present invention, when the projected parts which project from the bag inner and outer faces are held at one place, the projected parts can be firmly held while the forces are not scattered. Moreover, since the bag edge parts extending from the projected parts are also held, the forces are not concentrated only on the projected parts, and the entire opening edge part of the bag can be held. Accordingly, in the present embodiment, the fingers do not slip, or any pain, numbness, or the like is not generated on the finger tips, unlike the conventional sealing bag, and the sealing bag can be easily, smoothly, and securely unsealed. Additionally, in the projected parts which can be simultaneously held at the same place from the inside/outside of the bag, each projection width itself on the inner or outer face side of the bag can be reduced, as compared with projections and the like of the conventional sealing bag which individually project to the inner or outer face side of the conventional sealing bag. This eliminates the problem that the falling or the like of the projections brings difficulty in the manufacturing at the time of the bag-making or that the projections project long from the bag inner face and the fingers are not easily inserted in the opening part.

Moreover, in the sealing bag of the present invention, when the pair of tapes are bonded to the inner face of the bag body by thermal fusion, the projections disposed on the pair of tapes are not thermally fused onto the bag body inner face. By this constitution, when the chuck including the projected parts on the edge parts is thermally fused to the bag body, the only remaining part excluding the projected parts is fused on the back side, and the projected parts can be prevented from being fused on the bag side.

In general, the chuck disposed on the sealing bag formed of a synthetic resin is thermally fused, and accordingly integrally attached to the bag body. However, when the entire chuck including the projected parts is thermally fused as such, there is a possibility that the projected parts are thermally fused and flatted, and do not function as the means for preventing the fingers from slipping. In the present invention, by the constitution in which the only remaining part of the chuck excluding the projected parts is thermally fused on the bag side, and the projected parts are not fused, the projected parts can be prevented from being fused or flatted, and the projected parts can effectively function as the finger nonslip means according to the present invention.

Furthermore, in the sealing bag of the present invention, the projected parts can be disposed in the same position or different positions with respect to a depth direction of the bag body. By the constitution in which

the projected parts disposed opposite to the inner face of the bag body are disposed in the different positions in the depth direction of the bag, the oppositely projected parts do not interfere with each other in a state in which the chuck is clamped, that is, in a state in which the sealing bag is closed. In the present invention in which the projected parts do not interfere with each other in this manner, an outer shape of each projected part can be set to an optimum size in a range of a distance between the faces of the tapes opposed to each other at the time of chuck clamping, the projected parts are arbitrarily formed in sizes and shapes in such a manner that the parts are easily held in the fingers and the fingers are easily inserted between the projected parts, and an easy-to-unseal property of the sealing bag can further be enhanced.

Moreover, a size of the projected parts according to the present invention is constituted in such a manner that a maximum width of the part in a projecting direction on the inner and outer face sides of the bag body is 0.3 mm or more and is not more than a distance between the faces of the tapes opposed to each other. By this constitution, the size of the projected part can be set to be maximum in a range in which the projected parts opposed to each other at the time of the chuck clamping do not interfere with each other between the faces of the tapes opposed to each other. Especially, by a constitution in which the maximum width of the projected part in the projecting direction on the inner and outer face sides of the bag body is 0.5 mm or more and is 1/2 or less of the distance between the faces

of the tapes opposed to each other, the projected parts can be further easily grasped, and the fingers can be preferably easily inserted in a gap disposed between male and female line parts.

In the small-sized sealing bag for use for any of medical supplies and foods, for example, as for a tape having a tape thickness of about 0.15 to 0.16 mm, the distance between the faces of the tapes opposed to each other at the time of the chuck clamping is generally about 1.5 mm. However, if the oppositely projected parts which project from the faces of the tapes opposed to each other interfere with each other between the tape faces opposite to each other, the fingers are not easily inserted between the projected parts at the time of bag unsealing, and the easy-to-unseal property of the bag is impaired. On the other hand, in a case where the projected parts are reduced in order to enhance an insertion property of the fingers between the projected parts, for example, when the projection width of the projected part is less than about 0.3 mm, the projected part is excessively small, is not easily held in the fingers, and does not function as the means for preventing the fingers from slipping. To solve the problem, in the present invention, for example, with respect to the tape having a tape thickness of about 0.15 to 0.16 mm, the size of the projected part is set in such a manner that the maximum width of the part which projects to the inner or outer face side of the bag body is 0.3 mm or more, and is not more than the distance between the faces of the tapes opposed to each other at maximum, and the maximum width is preferably 0.1 mm or more and is 1/2

(about 0.7 mm) or less of the distance between the faces of the tapes opposed to each other. Accordingly, even when the projected parts are disposed opposite to each other in the same position of the bag body inner face, a finger holding property is secured. Moreover, a total of the projection widths of the projected parts which project between the faces of the tapes opposed to each other is set not to exceed the distance (about 1.5 mm) between the faces of the tapes opposed to each other, and the insertion properties of the fingers are not impaired. Accordingly, in the present invention, there can be provided a sealing bag in which holding properties of the fingers and an easy-to-insert property are both secured in satisfactory states, and which is superior in the easy-to-unseal property.

On the other hand, in a case where the projected parts are disposed in different positions in a depth direction of the bag body, the size of the projected part is constituted in such a manner that the maximum width of the part in the projecting direction on the inner and outer face sides of the bag body is 0.3 mm or more and 2.0 mm or less, and the maximum width is preferably 0.5 mm or more. In this case, the size is preferably constituted especially in such a manner that the maximum width of the part in the projecting direction on the inner and outer face sides of the bag body is 0.3 mm or more and is not more than the distance between the faces of the tapes opposed to each other, and the maximum width is preferably 0.5 mm or more. By this constitution, in a case where the projected parts are disposed in such a manner as to face each other in

different positions at the time of the chuck clamping, the projected part can further be formed to be large in a maximum range of the distance between the faces of the tapes opposed to each other.

As described above, in the small-sized sealing bag, with the tape having a tape thickness of about 0.15 to 0.16 mm, the distance between the faces of the tapes opposed to each other is about 1.5 mm at the time of the chuck clamping. On the other hand, when the projection width of the projected part is less than 0.3 mm, the holding properties of the fingers are deteriorated, and the projected part does not function as the means for preventing the fingers from slipping. Therefore, in the present invention, in a case where the projected parts are disposed opposite to each other in the different positions of the bag body inner face, the projected parts are formed in such a manner that the projection width on the bag body inner and outer face sides is entirely 0.3 mm or more, 2.0 mm or less at maximum, preferably 0.5 mm or more, and not more than the distance (about 1.5 mm) between the faces of the tapes opposed to each other, for example, with respect to the tape having a tape thickness of about 0.15 to 0.16 mm. Accordingly, each projected part of the tape is formed to be largest in a range of the distance between the faces of the tapes opposed to each other without interfering with each other, the properties for preventing the fingers from slipping are further enhanced, and the easy-to-unseal property of the sealing bag can be further enhanced.

Moreover, the projected part is constituted to

form a projection line having a circular sectional shape or a projection line having an angled sectional shape. In this manner, the sectional shape of the projected part according to the present invention is not especially limited as long as the projection line can integrally project to both the inner face side and the outer face side of the bag body. For example, a projection line having a circular sectional shape or a projection line having a quadrangular or rhombic sectional shape can be constituted. That is, the projected part according to the present invention can selectively set to have a sectional shape optimum for the sealing bag to which the present invention is applied in accordance with the size of the sealing bag or the chuck, a clamping force of the chuck, and the like. When the projected parts are disposed, it is possible to realize the sealing bag with the chuck, which is superior in versatility and expansibility.

Brief Description of the Drawings

FIG. 1 is a side sectional view of an entire bag, schematically showing a sealing bag provided with a chuck according to a first embodiment of the present invention;

FIG. 2 is a side sectional view of a chuck part, schematically showing the sealing bag with the chuck according to the first embodiment of the present invention, (a) shows a state in which the chuck is unclamped, and (b) shows a state in which the chuck is clamped;

FIG. 3 shows the sealing bag with the chuck according to the first embodiment of the present invention, (a) is a front view of the entire bag, and (b) is an

enlarged view of a part shown by a two-dot chain line of (a);

FIG. 4 is a side sectional view of the chuck part, for comparison of a size of a projected part in the first embodiment of the present invention with that in a conventional sealing bag, (a) shows the first embodiment of the present invention, and (b) shows the conventional sealing bag;

FIG. 5 is a diagram showing a state in which an opening part side of the sealing bag with the chuck is top-sealed according to the first embodiment of the present invention, (a) is a side sectional view, and (b) is an enlarged view of a bag front part;

FIG. 6 is a perspective view of the bag viewed from above, showing an operation for opening the sealing bag with the chuck according to the first embodiment of the present invention;

FIG. 7 is an explanatory view schematically showing a bag section, showing the operation for opening the sealing bag with the chuck according to the first embodiment of the present invention;

FIG. 8 is a side sectional view of the chuck part schematically showing a modification of the sealing bag with the chuck according to the first embodiment of the present invention, (a) shows a case where the projected parts have square sectional shapes, and (b) shows a case where the parts have rhombic shapes;

FIG. 9 is a side sectional view of the chuck part, schematically showing a modification of the sealing bag with the chuck according to the first embodiment of the

present invention, in which a plurality of projected parts are formed on an end edge part of each tape;

FIG. 10 is a side sectional view of the entire bag, schematically showing the sealing bag with the chuck according to a second embodiment of the present invention;

FIG. 11 is a side sectional view of the entire sealing bag, showing the sealing bag including a finger nonslip structure near an opening part of a conventional bag; and

FIG. 12 is a main part side sectional view near a bag opening part, showing another sealing bag including the finger nonslip structure near the opening part of the conventional bag.

Best Mode for Carrying out the Invention

Preferable embodiments of a sealing bag with a chuck according to the present invention will be described hereinafter with reference to the drawings.

[First Embodiment]

First, a first embodiment of the sealing bag with the chuck according to the present invention will be described with reference to FIGS. 1 to 9.

FIG. 1 is a side sectional view of an entire bag, schematically showing the sealing bag provided with the chuck according to the first embodiment of the present invention. FIG. 2 is similarly a side sectional view of a chuck part, schematically showing the sealing bag with the chuck according to the present embodiment, (a) shows a state in which the chuck is unclamped, and (b) shows a state in which the chuck is clamped. FIG. 3 shows the

sealing bag with the chuck according to the present embodiment, (a) is a front view of the entire bag, and (b) is an enlarged view of a part shown by a two-dot chain line of (a). FIG. 4 is a side sectional view of the chuck part, for comparison of a size of a projected part in the present embodiment with that in a conventional sealing bag, (a) shows the first embodiment of the present invention, and (b) shows the conventional sealing bag.

As shown in these figures, the sealing bag with the chuck according to the present embodiment is a sealing bag including a bag body 1 formed in a bag shape having an opening part 1a which opens on one side, and a chuck 10 of a female and male clamping type, which is attached near the opening part 1a of the bag body 1.

Moreover, a pair of projected parts 20 (20a, 20b) which project to bag inner and outer faces and constitute means for preventing fingers from slipping at the time of bag opening/closing are disposed on edge parts of a pair of tapes 11 constituting base materials of the chuck 10 attached to the inner face of the bag body 1.

The bag body 1 is a bag body formed of a resin into a bag shape which opens on one side. In the bag body 1, usually two resin films (a female-side film 2 and a male-side film 3) formed into flat rectangular shapes are superimposed, or one resin film is bent and superimposed. As shown in FIG. 3, three sides (or two sides) excluding one side constituting the opening part 1a are laminated by means such as thermal fusion (refer to laminated parts 5 shown in FIG. 3), and the films are formed into a bag

shape. Here, in general, a film obtained by laminating a biaxially stretched polypropylene film and a cast polypropylene film or the like is used in the resin film constituting the bag body 1, and is cut into various sizes in accordance with contents which are storage objects to form the bag.

The chuck 10 is opening/closing means for openably sealing the one-side opening part 1a of the bag body 1, and, as shown in FIG. 1, includes a pair of tapes 11 (11a, 11b) disposed near the opening part 1a of the bag body 1, and a pair of female and male clamping devices 12 (12a, 12b) formed on the surfaces of the tapes 11.

The pair of tapes 11 are band-shaped members (see FIG. 3) attached to the inner face of the bag body 1 and opposed to each other along the opening part 1a, and are, as shown in FIG. 1, constituted of the female-side tape 11a and the male-side tape 11b which are base materials of the pair of clamping devices 12a, 12b. The pair of tapes 11a, 11b are usually formed of a synthetic resin such as polypropylene, and attached to the inner face of the bag body 1 by thermal fusion.

Moreover, in the present embodiment, as shown in FIG. 3, the pair of tapes 11a, 11b are attached to positions inside the bag from the opening part 1a in the inner face of the bag body 1, and the projected parts 20 formed along end edges of the tapes 11 are not exposed from the opening part 1a of the bag body 1 as described later.

The pair of clamping devices 12 are a pair of female and male clamping means formed one by one on the respective surfaces of the pair of tapes 11a, 11b opposed

to each other, and are, as shown in FIG. 1, constituted of the female-side clamping part 12a formed on the female-side tape 11a and the male-side clamping part 12b formed on the male-side tape 11b, and both the clamping parts 12a, 12b are disposed opposite to the same position on the inner face side of the bag body 1.

Moreover, as shown in FIG. 2, when the female-side clamping part 12a is disengageably clamped with the male-side clamping part 12b, the opening part 1a of the bag body 1 is openably sealed.

The pair of clamping devices 12 are formed integrally with the tapes 11 constituting the base materials usually by a method such as extrusion molding. Here, the pair of clamping devices 12 may have any constitution as long as the parts have clamping structures (chuck structures) capable of openably sealing the bag body 1. For example, in the present embodiment, as shown in FIG. 2, the clamping devices are constituted of the female-side clamping part 12a whose section substantially has a C-shape having a slit on one side, and the male-side clamping part 12b which disengageably clamps in the female-side clamping part 12a via this slit and whose section has an arrowhead shape.

It is to be noted that in the present embodiment, a set (streak) of the pair of clamping devices 12 are disposed on the surfaces of the tapes 11, but at least one set of the clamping devices 12 may be disposed. A plurality of streaks of clamping devices 12 may be disposed such as a double chuck structure or the like including double clamping devices 12.

In the chuck structure including a plurality of clamping devices 12, since airtightness of the bag body 1 can be more securely held, the structure is preferable as a chuck structure of a sealing bag required to keep higher airtightness therein such as a sealing bag which contains a liquid.

Moreover, the projected parts 20 (20a, 20b) constituting finger nonslip means are formed on the respective end edge parts of the pair of tapes 11 of the chuck 10 constituted as described above. Details of the projected parts 20 according to the present embodiment will be described with reference to FIGS. 1 to 4.

As shown in these figures, the projected parts 20 of the present embodiment are a pair of projected members formed on the end edge parts of the pair of tapes 11 on the side of the opening part 1a of the bag body 1. Concretely, the projected parts 20 are constitute of the female-side projected part 20a formed on the female-side tape 11a and the male-side projected part 20b formed on the male-side tape 11b, both the projected parts 20a, 20b are disposed along the opening part 1a, and the parts face each other in the same position of the bag body 1 in a depth direction (vertical direction of the figure). Moreover, the projected parts 20a, 20b integrally project on the inner and outer face sides of the films 2, 3 constituting the bag body 1. In the present embodiment, as shown in FIGS. 1 and 2, projections are formed into circular sectional shapes.

Here, in the projected part 20 having the circular sectional shape, as shown in FIG. 4, projection widths (W_1

and W_2 shown in FIG. 4(a)) of the projected part on the inner and outer face sides of the bag body 1 are substantially uniformly formed, and a total maximum width (W shown in FIG. 4(a)) in the projecting direction on the inner or outer face side of the bag is about 0.3 mm or more and not more than the distance between the faces of the tapes opposed to each other, preferably 0.5 mm or more, and 1/2 or less (about 0.7 mm or less) of the distance between the faces of the tapes opposed to each other.

In general, in the small-sized sealing bag for use for any of medical supplies and foods, when the tape (11a, 11b) has a thickness of about 0.15 mm, the distance (D shown in FIG. 4(a)) between the faces of the tapes opposed to each other at the time of the chuck clamping is generally about 1.5 mm. In the present embodiment, the projected parts 20a, 20b face each other in the same positions of the bag inner face. Therefore, when the projected part and the oppositely projected part on the faces of the tapes opposed to each other interfere with each other between the faces of the tapes opposed to each other, the fingers are not easily inserted between the projected parts at the time of the bag unsealing, and the easy-to-unseal property of the bag is impaired. On the other hand, when the total (W in FIG. 4) of the projection widths of the projected part 20 on the bag outer face side (W_1 in the same figure) and on the bag inner face side (W_2 in the same figure) is less than, for example, about 0.3 mm, the projected parts are excessively small, are not easily held in the fingers, and do not function as the means for preventing the fingers from slipping.

To solve the problem, in the present embodiment, for example, the sizes of the projected parts 20a, 20b are set in such a manner that the maximum width W of the projected parts which projects to the inner or outer face side of the bag body 1 is 0.3 mm or less, and is not more than the distance between the faces of the tapes opposed to each other at maximum with respect to the tape having a thickness of about 0.15 to 0.16 mm. This results in $W_1 \fallingdotseq W_2 \fallingdotseq 0.67$ mm. When the thickness of the tape is set to 0.15 mm, $W \fallingdotseq 0.67(W_1)+0.67(W_2)+0.15$ (tape thickness) $\fallingdotseq 1.5$ mm (W), and the total (W) of the projection widths is not more than the distance between the faces of the tapes opposed to each other at maximum.

Furthermore, the size is set in such a manner that the maximum width W is preferably 0.5 mm or more, and 1/2 (about 0.7 mm) or less of the distance between the faces of the tapes opposed to each other. In this case, for example, when $W_1 \fallingdotseq W_2 \fallingdotseq 0.28$ mm, $W \fallingdotseq 0.28(W_1)+0.28(W_2)+0.15$ (tape thickness) $\fallingdotseq 0.7$ mm (W) including the thickness of 0.15 mm of the tape, and the total (W) of the projection widths is 1/2 or less of the distance between the faces of the tapes opposed to each other at maximum.

In this manner, even when the projected parts 20a, 20b are disposed opposite to each other in the same position of the bag body inner face, the holding properties of the fingers are secured, the total of the projection widths of the projected parts which project between the faces of the tapes opposed to each other is set not to exceed the distance (about 1.5 mm) between the faces of the

tapes opposed to each other, and the insertion properties of the fingers are prevented from being impaired. Accordingly, in the present embodiment, the pair of projected parts 20a, 20b constituting the means for preventing the fingers from slipping can be formed to be large at maximum in a range in which the parts do not interfere with each other, and both the holding properties of the fingers and the ease of insertion can be secured in satisfactory states.

Moreover, the projected parts 20 substantially uniformly and integrally projecting to the inner and outer face sides of the bag body 1 in this manner can be simultaneously held in the same place from the inside/outside of the bag with two finger or the like. As shown in FIG. 4, each projection width on the inner or outer face side of the bag can be reduced as compared with the projection widths (w_1 and w_2 shown in FIG. 4(b)) of the projections of a conventional sealing bag (see FIG. 12) which individually project to the inner and outer face sides of the bag. As a result, the total projection width can be reduced as compared with the conventional bag (see W shown in FIG. 4(a) and w shown in (b) of the same figure). Therefore, in the sealing bag provided with the projected parts 20 of the present embodiment, for example, the problem is eliminated that the manufacturing becomes difficult by occurrence of falling or the like of the projection at the time of the manufacturing of the bag body 1 or that the projection projects long from the bag inner face and the fingers are not easily inserted in the opening part. Therefore, a small-sized sealing bag superior in the

easy-to-unseal property can be efficiently manufactured.

Furthermore, in the present embodiment, the pair of tapes 11 are bonded to the inner face of the bag body 1 by the thermal fusion as described above, but the projected parts 20 formed on the tapes 11 are prevented from being thermally fused onto the bag body 1. That is, in the present embodiment, when the chuck 10 including the projected parts 20 on the tape end edge parts is thermally fused on the side of the bag body 1, an only remaining tape part excluding the projected parts 20 are fused on the bag side, and the projected parts 20 are prevented from being fused on the bag side (see FIG. 2).

The chuck 10 formed of a synthetic resin according to the present embodiment is thermally fused and accordingly integrally bonded to the bag body 1 in the same manner as in the usual sealing bag. However, when the entire chuck including the projected parts 20 is thermally fused as such, the projected parts 20 are fused and flatted by heat, and there is a possibility that the projected parts do not function as the means for preventing the fingers from slipping. To solve the problem, the present embodiment is constituted in such a manner that the only remaining parts of the tapes 11 excluding the projected parts 20 of the chuck 10 are thermally fused on the bag side, and the projected parts 20 are not thermally fused. Accordingly, the projected parts 20 are prevented from being fused or flatted, and the projected parts 20 can be effectively operated as the finger nonslip means.

Additionally, since the chuck 10 provided with the projected parts 20 is entirely stored in the bag body 1,

and the opening edge parts of the bag body 1 extend outside the chuck 10, the opening edge parts may be fused and top-sealed. When this type of sealing bag is used, for example, for distribution, all the four sides of the bag including the opening part on the chuck side need to be sealed in order to completely seal the bag. In the sealing bag of the present embodiment, since the opening edge parts of the bag body 1 extend outside the chuck 10, as shown in FIG. 5, the opening edge parts can be thermally fused or otherwise treated and accordingly top-sealed (see a top-sealed part 5a shown in FIGS. 5(a) and (b). Accordingly, even when the projected parts 20 are disposed, the sealing bag for the distribution requiring a high sealing property can be provided without impairing a top seal property.

It is to be noted that the projected part 20 according to the present embodiment is constituted in such a manner that each projection having a circular sectional shape is formed on the tape 11, but the sectional shape, the number of the projections or the like is not especially limited as long as the projections can integrally project on both the inner and outer face sides of the bag body 1. For example, as shown in FIG. 8, the projected parts 20 may be constituted of the projections whose sections have angled sectional shapes such as squares (the same figure (a)) and rhombic shapes (the same figure (b)). Also with respect to the number of the projected parts 20, for example, as shown in FIG. 9, a plurality of projections can be formed on the end edge parts of the respective tapes 11.

Moreover, in the present embodiment, as described above, the maximum width W of each projected part 20 is set

to be not more than the distance (about 1.5 mm) between the faces of the tapes opposed to each other in accordance with the tape thickness of about 0.15 to 0.16 mm and the distance (about 1.5 mm) between the faces of the tapes opposed to each other as described above, but, needless to say, the value can be appropriately changed in accordance with the thickness of the tape and the distance between the faces of the tapes opposed to each other. For example, when the distance between the faces of the tapes opposed to each other exceeds 1.5 mm, the maximum width W of each projected part 20 can be set to 1.5 mm or more. In this manner, the shapes, number, and sizes of the projected parts 20 can be variously changed, and the projected parts 20 having sectional shapes and the number of projections optimum for the sealing bag to which the present embodiment is applied can be selectively set in accordance with the size of the bag body 1 or the chuck 10, the clamping force of the chuck or the like.

Next, an opening/closing operation of the sealing bag with the chuck according to the present embodiment constituted as described above will be described with reference to FIGS. 2, 6, and 7. FIG. 6 is a perspective view of the bag viewed from above, showing the operation for unsealing the sealing bag with the chuck according to the present embodiment, and FIG. 7 is similarly an explanatory view schematically showing a bag section, showing the operation for unsealing the sealing bag.

First, the opening part 1a is open in a state (state shown in FIG. 2(a)) in which the clamping of the

chuck 10 disposed in the bag body 1 is released. Therefore, arbitrary contents such as medical supplies, foods or miscellaneous goods can be stored in the bag body 1. After the contents are stored in the bag body 1, the chuck 10 can be closed to seal the bag body 1.

When the chuck 10 is closed, the female-side clamping part 12a and the male-side clamping part 12b (see FIG. 2(a)) of the chuck 10 opposed to each other at a distance are partially positioned, and held in the fingers, and the held places are pressed with the fingers to clamp both the clamping parts 12a, 12b (see FIG. 2(b)). Moreover, the pressing fingers are moved along the opening part, and both the clamping parts 12a, 12b are successively clamped, so that the clamping devices 12 can be entirely closed.

Next, when the chuck 10 in the clamped state (state shown in FIG. 2(b)) of the clamping device 12 is opened, first the opening edge parts of the bag body 1 are held in the fingers, and a pair of projected parts 20 positioned in the bag edge parts are held in two fingers, respectively (see FIG. 6). At this time, since the projected parts 20 integrally project on the inner and outer face sides of the bag body 1, as shown in FIG. 7, both the projected parts 20a, 20b are firmly held in one place from the inner or outer face of the bag with two fingers, respectively, and the projected parts 20 are held in the thick parts of the holding fingers. Since the opening edge parts of the bag body 1 extend outside the projected parts 20 (palm side of the holding finger), as shown in FIG. 7, the extending bag edge parts are held in

the fingers together with the projected parts 20.

When the bag body 1 is pulsed on the opposite sides in this state, as shown in FIG. 6, a clamped part of the female-side clamping part 12a and the male-side clamping part 12b is released, the chuck 10 is successively unclamped as such from an unclamped part, and accordingly the clamping of the entire clamping device 12 can be released. Accordingly, the sealing by the chuck 10 is released, and the bag body 1 is opened to remove/insert the contents. After storing the contents, the chuck 10 is closed in the same manner as described above, and the bag body 1 can be sealed.

As described above, according to the sealing bag with the chuck according to the present embodiment, the projected parts 20 constituting the means for preventing the fingers from slipping at the time of the opening/closing of the bag are disposed along the end edge parts of the chuck 10 which opens/closes or seals the bag body 1, and the projected parts 20 are disposed together with the chuck 10 to be positioned inside the opening part 1a of the bag body 1. Therefore, unlike the conventional sealing bag, the chuck or the nonslip structure does not largely project outside the bag, and the chuck and the entire bag can be miniaturized. In the present embodiment in which the entire chuck 10 including the projected parts 20 is stored in the bag body 1 in this manner, the opening edge parts of the bag body 1 further extend outside the chuck 10, and the entire opening part 1a including the chuck 10 is covered with the side-face films 2, 3 of the

bag body 1. Therefore, the contents do not spill out, or any foreign matter does not penetrate during the opening/closing of the sealing bag, and the opening part can be top-sealed.

Moreover, in the present embodiment, the projected parts 20 constituting the finger nonslip means of the sealing bag are constituted of the projections substantially uniformly and integrally projecting to the inner and outer face sides of the bag body 1 and having circular sectional shapes or the like in a state in which the chuck 10 is bonded to the inner face of the bag body 1, and the projections are positioned inside the bag without being exposed from the opening part 1a of the bag body 1. Therefore, during the opening/closing of the bag, the projected parts 20 integrally projecting to the inner and outer face sides of the bag body 1 can be firmly held in one place from the bag inner or outer face with two fingers.

Additionally, since the projected parts 20 are positioned inside the bag body, the bag opening edge parts extend further outside the projected parts 20 held in the fingers (palm side of the holding finger), and the extending part can be held in the fingers together with the projected parts 20.

Therefore, according to the sealing bag of the present embodiment, the projected parts 20 which project from the bag inner and outer faces can be held in one place, therefore the projected parts 20 can be firmly held without scattering any force, and the bag edge parts extending from the projected parts 20 can also be held

together. Therefore, any force is not concentrated on the projected parts 20 only, and the bag edge parts can be held. Accordingly, the fingers do not slip, any pain, numbness, or the like is not generated in the finger tips as in the conventional sealing bag, and the sealing bag can be easily, smoothly, and securely opened.

Moreover, in the projected parts 20 which can be simultaneously held in the same place from the bag inside/outside in this manner, each projection width itself on the inner and outer face sides of the bag body 1 can be reduced as compared with the projections and the like of the conventional sealing bag which individually project to the inner and outer face sides of the bag. This eliminates the conventional problem that the manufacturing becomes difficult by the occurrence of the falling or the like of the projections at the time of the bag-making or that the projections project long from the bag inner face and the fingers are not easily inserted in the opening part.

Furthermore, in the present embodiment, when the chuck 10 including the projected parts 20 on the respective edge parts of the tapes 11 is thermally fused onto the bag body 1, the only remaining parts of the tapes 11 excluding the projected parts 20 are fused on the bag side, and the projected parts 20 are prevented from being fused on the bag side. Therefore, the projected parts 20 can be prevented from being fused or flatted, and the projected parts 20 can be effectively operated by the finger nonslip means of the sealing bag according to the present embodiment.

[Second Embodiment]

Next, a second embodiment of the sealing bag with the chuck according to the present invention will be described with reference to FIG. 10. FIG. 10 is a side sectional view of the entire bag, schematically showing the sealing bag with the chuck according to the second embodiment of the present invention.

The sealing bag with the chuck according to the present embodiment shown in the same figure is a modification of the above-described first embodiment, and the projected parts 20 disposed opposite to each other in the same position in the bag body 1 in the first embodiment are disposed in different positions with respect to a depth direction of the bag body 1. The other constituting parts are similar to those of the first embodiment, similar constituting parts are denoted with the same reference numerals as those of the first embodiment, and detailed description thereof is omitted.

Concretely, as shown in FIG. 10, in the projected parts 20 according to the present embodiment, a male-side projected part 20b is positioned inwards from a female-side projected part 20a in the bag with respect to the depth direction of the bag body 1 (vertical direction of the figure), and the positions of both the projected parts 20a, 20b differ by about 1 mm in the depth direction of the bag body 1. Moreover, in the present embodiment, projection widths (see W_1 and W_2 of FIG. 4(a)) of the projected parts 20 formed into circular sectional shapes on bag inner and outer face sides are substantially uniformly formed in the same manner as in the first embodiment, and a maximum width

(see W shown in FIG. 4(a)) of a projecting direction on bag inner and outer face sides is constituted to be 0.3 mm or more and 2.0 mm or less, and the maximum width is preferably 0.5 mm or more.

As described above, in the small-sized sealing bag, when a tape has a thickness of about 0.15 to 0.16 mm, a distance between the faces of the tapes opposed to each other at the time of chuck clamping is about 1.5 mm. On the other hand, when a total (W) of the projection widths of the projected part 20 in directions on a bag outer face side (W_1) and a bag inner face side (W_2) is less than, for example, about 0.3 mm, holding properties of fingers are deteriorated, and the parts do not function as means for preventing the fingers from slipping.

To solve the problem, in the present embodiment, the projected parts 20 are disposed opposite to each other in the different positions of the bag body inner face, and are formed in such a manner that the maximum width W of the projected parts which project to the inner and outer sides of the bag body 1 is 0.3 mm or more, 2.0 mm or less at maximum. The maximum width W is preferably 0.5 mm or more and 1.5 mm or less (not more than the distance between the faces of the tapes opposed to each other).

In a position where the projected parts 20 opposed to each other do not interfere with each other, $W_1 \fallingdotseq W_2 \fallingdotseq 1.5$ mm can be set. Assuming that the thickness of the tape is 0.15 mm, $W \fallingdotseq 1.5+1.5+0.15 \fallingdotseq 3.0$ mm, and W can be set to be twice the distance between the faces of the tapes opposed to each other at maximum. Additionally, when W exceeds about 2.0 mm, the fingers or hands are not easily inserted,

and there is a possibility that an unsealing property is impaired. To solve the problem, in the present embodiment, since the respective projected parts 20 are disposed in the different positions in the bag body 1, interference is inhibited from being caused between the projected parts, and the projected parts 20 can be formed to be large at maximum in a range of the distance between the faces of the tapes opposed to each other, in which the unsealing property is not impaired.

It is to be noted that in the present embodiment, the maximum width W of each projected part 20 is set to 2.0 mm at maximum, and preferably 1.5 mm or less in accordance with the distance (about 1.5 mm) between the faces of the tapes opposed to each other. Needless to say, this value can be appropriately changed in accordance with the distance between the faces of the tapes opposed to each other in the same manner as in the above-described first embodiment. For example, when the distance between the faces of the tapes opposed to each other exceeds 1.5 mm, the maximum width W of each projected part 20 can be set to 0.3 mm or more and to be not more than the distance between the faces opposite to each other. In the present embodiment, the difference between the positions of the projected parts 20a, 20b in the depth direction of the bag body 1 is about 1 mm, but, needless to say, this can be appropriately changed in accordance with sizes or configurations of the projected parts 20, bag body 1, clamping devices 12 and the like.

As described above, according to the sealing bag with the chuck of the present embodiment, the projected

parts 20 disposed opposite to the inner faces of the bag body 1 are disposed in the different positions in the depth direction of the bag. Therefore, the oppositely projected parts do not interfere with each other in a state in which the clamping devices 12 of the chuck 10 are clamped, that is, the sealing bag is closed. Moreover, accordingly, an outer shape of the projected part 20 according to the present embodiment can be set to be an optimum size in a range of a distance D between the faces of the tapes opposed to each other at the time of the chuck clamping. The parts are easily held in the fingers, the projected parts 20 having such sizes and shapes that the fingers are easily inserted can be arbitrarily formed, and the easy-to-unseal property of the sealing bag can further be enhanced.

[Examples]

Examples of the sealing bag with the chuck according to the present invention will be described hereinafter more concretely in accordance with comparative examples. In the following example, the sealing bag described above in each embodiment is manufactured based on the following concrete conditions.

[Example 1]

(1) A chuck (tapes and clamping devices) was formed by polypropylene.

(2) A projected part of a tape end part was formed into a round sectional shape, and a diameter of a circular sectional shape part of the projected part was set to 0.3 mm.

(3) The projected parts were formed in such a manner that the parts were disposed in the same position on

male and female sides in accordance with the sealing bag described above in the first embodiment.

(4) A bag body was formed using a film obtained by laminating a biaxially stretched polypropylene film and a cast polypropylene film.

(5) Tape parts excluding projected parts on tape end parts are fused onto the film of the bag body, and the projected parts are prevented from being fused onto the bag body.

[Example 2]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was set to 0.5 mm. The others were similar to Example 1.

[Example 3]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was set to 0.7 mm. The others were similar to Example 1.

[Example 4]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was set to 1.0 mm. The others were similar to Example 1.

[Example 5]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was set to 1.5 mm. The others were similar to Example 1.

[Example 6]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was set to 0.3 mm. The position of the projected part on a male side was shifted by 1 mm from that on a female side in

accordance with the sealing bag described above in the second embodiment. The others were similar to Example 1.

[Example 7]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was set to 1.0 mm. The position of the projected part on a male side was shifted by 1 mm from that on a female side in accordance with the sealing bag described above in the second embodiment. The others were similar to Example 1.

[Example 8]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was set to 1.5 mm. The position of the projected part on a male side was shifted by 1.5 mm from that on a female side in accordance with the sealing bag described above in the second embodiment. The others were similar to Example 1.

[Example 9]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was set to 2.0 mm. The position of the projected part on a male side was shifted by 2.0 mm from that on a female side in accordance with the sealing bag described above in the second embodiment. The others were similar to Example 1.

[Comparative Example 1]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was set to 0.2 mm. The others were similar to Example 1.

[Comparative Example 2]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was

set to 2.0 mm. The others were similar to Example 1.

[Comparative Example 3]

A projected part of a tape end part was formed into a circular sectional shape, and a diameter thereof was set to 2.5 mm. The position of the projected part on a male side was shifted by 2.5 mm from that on a female side. The others were similar to Example 1.

[Comparative Example 4]

A chuck "P-560" (manufactured by Idemitsu Unitech Kabushiki Kaisha) including a projected piece which projected only inside a bag body was used as the chuck (tape with a clamping part). The others were similar to Example 1.

[Comparative Example 5]

A chuck which did not include any projected part, projected piece or the like at a tape end part was used. The others were similar to Example 1.

Unsealing tests of sealing bags manufactured under conditions of Examples 1 to 9 and Comparative Example 1 to 5 described above were performed, ease of grasping, and ease of insertion of fingers were inspected, and generation of pinholes in a bag body side face sealing part and deformation of a projected part after the bag-making were inspected.

Inspection results are shown in Table 1 as follows.

[Table 1]

	Diameter (mm) of projected part or projection width	Position of projected part on male, female side	Unseal feeling 1 (ease of clamping)	Unseal feeling 2 (ease of insertion of fingers)	Deformation of projected part after bag making
Example 1	0.3	Same	△	◎	◎
Example 2	0.5	Same	○	○	◎
Example 3	0.7	Same	○	○	2j
Example 4	1.0	Same	◎	△	◎
Example 5	1.5	Same	◎	△	◎
Example 6	0.3	vertical 1 mm	△	◎	◎
Example 7	1.0	vertical 1 mm	◎	◎	◎
Example 8	1.5	vertical 1.5 mm	◎	◎	◎
Example 9	2.0	vertical 2.0 mm	◎	△	◎
Comp. Ex. 1	0.2	Same	×	○	◎
Comp. Ex. 2	2.0	Same	◎	×	◎
Comp. Ex. 3	2.5	vertical 2.5 mm	◎	×	◎
Comp. Ex. 4	0.7	Same	△	×	△
Comp. Ex. 5	No projection	-	×	×	-

Symbols shown in Table 1 above have the following meaning.

- Unseal feeling 1 ◎: very easy to clamp, ○: easy to clamp, △: slightly difficult to clamp, ×: difficult to clamp
- Unseal feeling 2 ◎: fingers very easily inserted, ○: easy to insert, △: slightly difficult to insert, ×: difficult to insert
- Deformation of projected part after bag making ◎: no deformation, △: slight deformation (falling)

As apparent from Table 1, the projected parts are disposed in the same position on male-side and female-side tapes. In this case, it was confirmed that, as described in Example 1, assuming that the diameter of the projected part is 0.3 mm, ease of clamping was slightly inferior, but ease of inserting the fingers were satisfactory. Moreover, as described in Examples 2 and 3, it has been confirmed that both ease of clamping and ease of inserting the fingers are satisfactory, when the diameter of the projected part is set to a range of 0.5 mm to 0.7 mm. As described in Examples 4 and 5, it has been confirmed that the ease of inserting the fingers is slightly inferior, but the ease of clamping is very satisfactory, when the diameter of the projected part is set to a range of 1.0 mm to 1.5 mm. In this range, the ease of clamping is not impaired because of a small diameter of the projected part as in Comparative Example 1. It has also been confirmed that the ease of inserting the fingers is not deteriorated because of the large diameter of the projected part as in Comparative Example 2.

Moreover, as described in Examples 6 to 9, when the positions of the projected parts are shifted by a range of 1 mm to 2.0 mm on the male and female sides, the diameter of the projected part can be increased to 2.0 mm, and it has been confirmed that the ease of clamping and the ease of inserting the fingers are further enhanced. In this case, as described in Comparative Example 3, it has been confirmed that the ease of clamping or the ease of inserting the fingers is not impaired because of the excessively large diameter of the projected part, or that

the falling or the deformation is not caused in the projected part at the time of the bag-making.

It is to be noted that the sealing bag with the chuck of the present invention is not limited to the above-described embodiments only, and, needless to say, various modifications/embodiments are possible in the scope of the present invention.

For example, in the above-described embodiments, as the example of the sealing bag, the comparatively small-sized sealing bag for containing any of the medical supplies, foods, miscellaneous goods and the like has been described, but the application or the object of the sealing bag is not limited to this case. The present invention can be applied to the bag having any application or function, as long as the sealing bag with the chuck includes the chuck capable of sealing the bag in the bag body formed of the synthetic resin. Therefore, the present invention can be applied to not only the small-sized sealing bag but also various types of chucked sealing bags such as a comparatively large-sized sealing bag, a sealing bag including a check valve for nozzle insertion, which deaerates or compresses the bag, and a sealing bag provided with a chuck slider which is an opening/closing part of the chuck.

Industrial Applicability

As described above, according to a sealing bag with a chuck according to the present invention, projected parts which integrally project to both the inner and outer

faces of a bag body are disposed on tape end edge parts of the chuck, further the projected parts are disposed inside the bag body without being exposed from an opening part in the bag body or without being fused on a bag side, and accordingly an easy-to-unseal property can be securely enhanced without enlarging the chuck or the entire bag or without fusing or flatting the projected part at the time of bag-making. Accordingly, it is possible to realize a sealing bag with a chuck, which is preferable especially for a small-sized sealing bag for use in storing any of medical supplies, foods, miscellaneous goods and the like.